

The seal of the State of South Dakota is a circular emblem. It features a central landscape with a river, hills, and a small town. The words "STATE OF SOUTH DAKOTA" are written in a circle around the top, and "GREAT SEAL" around the bottom. The year "1889" is at the bottom. A banner across the middle reads "UNDER THE RULE OF LAW".

STATEMENT OF BASIS

Title V Air Quality Operating Permit Renewal

**NuStar Pipe Line Operating Partnership, L.P.
Mitchell, South Dakota**

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1.0 BACKGROUND

On March 9, 1998, Kaneb Pipe Line Operating Partnership, LP (Kaneb) was issued Title V air quality operating permit #28.9903-08 for its bulk petroleum marketing terminal in Mitchell, South Dakota. On May 29, 2001, the permit was revised to include two storage tanks used to store denatured ethanol. In July 2001, Kaneb's permit was again revised by adding a third storage tank (Tank 01-43) capable of storing denatured ethanol.

On July 1, 2005, Kaneb notified the Department their new parent company would be Valero Logistics Operation, L.P (Valero). On March 26, 2008, Valero notified the Department they were changing their name to NuStar Pipeline Operating Partnership, LP (NuStar). The name change was effective on March 31, 2008.

NuStar is a refined petroleum pipeline terminal. The facility handles refined petroleum products including propane, unleaded regular gasoline, unleaded premium gasoline, #2 fuel oil, #1 fuel oil, diesel and interface. The terminal receives the petroleum liquids through a pipeline network. The Primary Standard Industrial Classification (SIC) Code is 4613.

There have been no complaints or violations filed against this facility since the last permit review.

1.1 Operational Equipment

Table 1-1 provides a description of the existing equipment at NuStar's facility in Mitchell from the Title V air quality operating permit issued January 5, 2007.

Table 1-1 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Capacity	Control Equipment
#1	1998 Two-bay submerged fill transport loading rack with 8 arms. Loading distillate oil, interface, gasoline, intermediate petroleum products, and fuel blend stocks, and ethanol.		Vapor combustor
	John Zink vapor combustor fired with propane.	52 million Btus per hour	
#2	Tank #01-07 – 1964 aboveground storage tank with a fixed roof for distillate oil, ethanol, interface, gasoline, intermediate petroleum product, or fuel blend stock.	8,442 gallons	Not applicable
#3	Tank #01-08 – 1965 aboveground storage tank with a fixed roof for distillate oil, ethanol, interface, gasoline, intermediate petroleum product, or fuel blend stock.	8,442 gallons	Not applicable
#4	Tank #01-36 – 1993 aboveground storage tank with a fixed roof for distillate oil or	17,766 gallons	Not applicable

Unit	Description	Maximum Capacity	Control Equipment
	ethanol.		
#5	Tank #01-39 – 1993 aboveground storage tank with a fixed roof for distillate oil or ethanol.	17,766 gallons	Not applicable
#6	Tank #01-43 – 1993 aboveground storage tank with a fixed roof for distillate oil or ethanol.	17,766 gallons	Not applicable
#7	Tank #05-13 – 1964 aboveground storage tank with a fixed roof for distillate oil or ethanol.	172,578 gallons	Not applicable
#8	Tank 05-14 – 1964 aboveground storage tank with an internal floating roof for distillate oil, ethanol, interface, gasoline, intermediate petroleum products, or fuel blend stock.	163,716 gallons	Not applicable
#9	Tank #10-18 – 1964 storage tank with a above ground fixed roof for distillate oil, ethanol, interface, gasoline, intermediate petroleum product, or fuel blend stock.	376,908 gallons	Not applicable
#10	Tank #10-19 – 1964 storage tank with a above ground fixed roof for distillate oil, ethanol, interface, gasoline, intermediate petroleum product, or fuel blend stock.	374,808 gallons	Not applicable
#11	Tank #20-03 – 1964 storage tank with a above ground fixed roof for distillate oil.	808,122 gallons	Not applicable
#12	Tank 20-24 – 1992 aboveground storage tank with an internal floating roof for distillate oil, ethanol, interface, gasoline, intermediate petroleum product, or fuel blend stock.	837,984 gallons	Not applicable

Existing insignificant activities identified in the application as having the potential to emit less than 2 tons per year are listed as follows:

1. Horizontal tanks for storage of additives;
2. Equipment fugitives from valves, fittings, pump seal, etc.; and
3. Other insignificant activities including oil/water separator, facility maintenance activities, etc.

1.2 Requested Action

On June 27, 2011, the Department received an application to renew NuStar's Title V air quality operating permit. NuStar requested the following modifications to its permit:

1. Tanks 10-18 (Unit #9) and Tank 10-19 (Unit #10), be restricted to storing only distillate fuels. The tanks are both fixed roof tanks and do not meet the requirements of 40 CFR 63 Subpart BBBBBB; and
2. As a result of this change, the hazardous air pollutant (HAP) screening equation found in 40 CFR 63 Subpart R must be revised:
 - a. TF, the term defining the number of fixed roof tanks in gasoline service needs to be changed from 4 to 2; and
 - b. The Q term in the screening equation, defining the daily throughput of gasoline, would be increased from 48,000 barrels per day to 60,000 barrels per day.

The Department will review these proposed revisions and make the appropriate changes in the permit.

2.0 New Source Performance Standards

DENR reviewed the New Source Performance Standards listed in 40 CFR Part 60 to determine if any of the federal New Source Performance Standards are applicable to this facility. The following may be applicable:

2.1 Standards Applicable to Storage Tanks

There are three New Source Performance Standards for storage vessels. The three standards are applicable to the following storage vessels:

1. 40 CFR Part 60, Subpart K: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after June 11, 1973 but prior to May 19, 1978;
2. 40 CFR Part 60, Subpart Ka: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after May 18, 1978; and
3. 40 CFR Part 60, Subpart Kb: applicable to storage vessels for volatile organic liquids capable of storing 75 cubic meters (approximately 19,813 gallons) or greater and commenced construction after July 23, 1984.

Tank #01-07, #01-08, #05-13, #05-14, #10-18, #10-19, and #20-03 were constructed prior to the dates specified above and are not applicable to Subpart K, Ka, or Kb.

Tank #01-36, #01-39, and #01-43 were constructed in 1993 and not applicable to Subpart K and Ka. The maximum storage of the three tanks is 17,776 gallons which is below the threshold under Subpart Kb. Therefore, Subpart Kb is not applicable.

Tank 20-24 was built in 1992, has a capacity of 837,984 gallons (3,172 cubic meters), and is capable of storing liquids with a maximum true vapor pressure equal to or greater than 3.5 kilo Pascal. Therefore, Tank 20-24 is applicable to Subpart Kb. NuStar installed an internal floating roof that meets the requirements listed in § 60.112(b)(a)(1)(i). Because an internal floating roof

has been installed, only the requirements in Subpart Kb regarding an internal floating roof will be included in the draft permit.

2.2 ARSD 74:36:07:23 – 40 CFR Part 60, Subpart XX

The Department reviewed the Standards of Performance for Bulk Gasoline Terminals to determine if it is applicable to NuStar's operation. Subpart XX is applicable if:

1. The provisions of this subpart are applicable to the total of all the loading racks at a bulk gasoline terminal which deliver liquid product into gasoline tank trucks; and
2. The construction or modification of the loading rack commences after December 17, 1980.

NuStar's bulk truck loading terminal was originally constructed in 1965. In 1999, the exiting loading rack was dismantled and replaced with the current loading rack – therefore, Subpart XX is applicable.

2.3 Other Applicable New Source Performance Standards

DENR reviewed the other New Source Performance Standards and determined there are no other standards applicable to NuStar.

3.0 New Source Review

The Administrative Rules of South Dakota (ARSD) 74:36:10:01 notes that new source review regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. NuStar's operations are located near Mitchell, South Dakota, which is in attainment or unclassifiable for all the pollutants regulated under the Clean Air Act. Therefore, NuStar is not subject to new source review.

4.0 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);
4. Sulfur dioxide (SO₂);
5. Nitrogen oxides (NO_x);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Fluorides

10. Sulfuric acid mist;
11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and
14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

One of the 28 source categories listed is “petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels.” Under the PSD program petroleum refers to unrefined crude oils. The facility stores only refined petroleum fuels, and less than 300,000 barrels; therefore, the PSD threshold for this facility is 250 tons per year.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the “Tailoring Rule.”

On May 13, 2010, EPA issued the final version of the “Tailoring Rule” for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and
5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

4.1 Emission Factors

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

Potential uncontrolled emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application and assuming the unit operates every hour of every day of the year. Potential uncontrolled emissions are not realistic of the actual emissions and are used only to identify which air quality permit and the requirements NuStar must meet.

4.2 Potential Emissions from Loading Rack

Loading rack emissions occur primarily as a result of the loading of transport tanks with gasoline. The dry tanks contain vapor from the previous load. As the tank fills, these vapors are displaced and vented to the vapor collection unit. Because of the low volatility of distillate oils, negligible amounts of vapor remain in transport tanks previously filled with these products.

Volatile organic compound emissions from the loading rack are estimated based on the gasoline throughput and a loading loss emission factor calculated using Equation 4-1, which is derived from AP-42, 5.2-4, June 2008.

Equation 4-1 – Loading Loss

Where:

- L_L = loading loss, in pounds per 1,000 gallons of liquid loaded;
- S = saturation factor;
- P = true vapor pressure of liquid loaded, in pounds per square inch absolute;
- M = molecular weight of vapors, in pounds per pound-mole; and
- T = temperature of liquid loaded, in Rankin degrees.

Throughput data for the loading rack was provided in the 2011 renewal application. The maximum NuStar is capable of processing through the loading rack is limited by the throughput limit of 60,000 barrels per day or 2,520,000 gallons per year which NuStar accepted to avoid the requirements in 40 CFR Part 63, Subpart R. Since it appears NuStar can process 100% of the throughput limit as gasoline which results in the greatest volatile organic compound emissions, the potential to emit from the loading rack will be based on gasoline only. The parameters for Equation 4-1 for distillate oil and denatured ethanol are listed for informational purposes. This data is summarized in Table 4-1 and used in Equation 4-1 to calculate emissions.

Table 4-1 – Potential Uncontrolled Loading Rack Emissions¹

Description	Gasoline	Distillate	Denatured Ethanol
Modeled Throughput (gallons per year)	919,800,000		
S (submerged loading: dedicated normal service)	0.6	0.6	0.6

P (pounds per square inch absolute)	4.44	0.0081	0.518
M (pounds per pound mole)	63.33	130	49.9
T (Rankin)	504.8	504.8	504.8
L _L (pounds per 1,000 gallons loaded)	4.16	0.02	0.38
VOC emissions (tons per year)	1,913		

¹ – Vapor pressure and molecular weight data taken from application.

4.3 Controlled Emissions from Loading Rack

The loading rack is equipped with a 1999 John Zink volatile organic combustion unit rated at 52 million Btus per hour and fired with propane. Volatile organic compound emissions from the loading rack are piped to the combustor unit. NuStar conducted stack testing of the 1999 John Zink vapor combustion unit on August 3, 1999. The stack test indicated the vapor combustion unit operated with a volatile organic compound emission rate of 11.7 mg/l (3.4 pounds per hour) while loading gasoline. During the test, the inlet emission rate was also collected at the same time and resulted in an inlet emission rate of 49.16 pounds per hour. The capture efficiency is 98.7% based on AP-42, 5.2.2.1.1, June 2008. The overall efficiency of the vapor combustion unit is based on Equation 4-2.

Equation 4-2 – Overall Efficiency

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Equation 4-3 was used to calculate controlled volatile organic compound emissions from the loading rack. The potential volatile organic compound emissions from the loading rack using the vapor combustion unit is listed in Table 4-2.

Equation 4-3 – Controlled Loading Loss

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Where:

- L_L = loading loss, in pounds per 1,000 gallons of liquid loaded;
- S = saturation factor;
- P = true vapor pressure of liquid loaded, in pounds per square inch absolute;
- M = molecular weight of vapors, in pounds per pound-mole;
- T = temperature of liquid loaded, in Rankin degrees; and
- 0.923 is the overall control efficiency of the vapor combustion unit.

Table 4-2 – Potential Controlled Loading Rack Emissions ¹

	Gasoline
Modeled Throughput (gallons per year)	919,800,000
S (submerged loading: dedicated normal service)	0.6
P (pounds per square inch absolute)	4.44
M (pounds per pound mole)	63.33
T (Rankin)	504.8

L _L (pounds per 1,000 gallons loaded)	0.28
VOC emissions (tons per year)	130

¹ – Vapor pressure and molecular weight data taken from application.

4.4 Emissions from Vapor Combustion Unit

Although the vapor combustion unit reduces volatile organic compound and hazardous air pollutant emissions, the combustion process does emit other air pollutants. The emission rate for the other criteria air pollutants from the loading rack's vapor combustor, which burns propane, is based on AP-42, Table 1-5-1, 7/08 and is listed below. The Department used a propane heat input rating of 91.5 million Btus per 1,000 gallons to convert the emission factor to pounds per million Btus. The Department also assumed the sulfur content of propane is similar to natural gas which is 0.2 grains/100 cubic foot.

1. PM/PM10/PM2.5 = 0.8 pounds per 1,000 gallons (0.009 pounds per million Btus);
2. SO₂ = 0.018 pounds per 1,000 gallons (0.0002 pounds per million Btus);
3. NO_x = 15 pounds per 1,000 gallons (0.16 pounds per million Btus); and
4. CO = 8.4 pounds per 1,000 gallons (0.09 pounds per million Btus).

The John Zink vapor combustion unit is rated at 52 million Btus per hour. The emissions from the vapor combustion unit are calculated using Equation 4-4 and the above emission factors.

Equation 4-4 – Potential Emissions from Vapor Combustion Unit

The potential emissions from the vapor combustion unit for the other criteria air pollutants are shown in Table 4-3.

Table 4-3 – Potential Other Criteria Air Emissions from Vapor Combustion Unit

TSP/PM10/PM2.5	SO ₂	NO _x	CO
2.0 tons/year	0.05 tons/year	36.4 tons/year	20.5 tons/year

The emission factors for greenhouse gases while firing propane are from AP-42, Table 1-5-1, 7/08 and are listed below. The Department used a propane heat input rating of 91.5 million Btus per 1,000 gallons to convert the emission factor to pounds per million Btus.

1. Carbon dioxide = 14,300 pounds per 1,000 gallons (156.3 pounds per million Btus);
2. Nitrous oxide = 0.9 pounds per 1,000 gallons (0.01 pounds per million Btus); and
3. Methane = 0.2 pounds per 1,000 gallons (0.002 pounds per million Btus).

In the case of the greenhouse gases, the emission factors for carbon dioxide, nitrous oxide and methane need to be multiplied by 1, 310, and 21, respectively, to convert the results to carbon dioxide equivalent emissions. The carbon dioxide equivalent emissions were calculated using Equation 4-4. The potential emissions for the greenhouse gases are summarized in Table 4-4.

Table 4-4 – Vapor Combustor Unit Greenhouse Gas Potential Emissions

Pollutant	Potential Emissions	Potential Carbon Dioxide Equivalent
Carbon Dioxide	35,599 tons per year	35,599 tons per year
Nitrous Oxide	2.3 tons per year	713 tons per year
Methane	0.5 tons per year	11 tons per year
Total		36,323 tons per year

4.5 Storage Tanks

The storage tank emissions were calculated by the applicant using the Environmental Protection Agency's Tanks 4.09 program and are included in the application. The tank emission results are summarized in Table 4-5.

Table 4-5 – Storage Tank VOC Emissions

Unit	Tank	VOCs (tons per year)
#2	#01-07	3.84
#3	#01-08	3.84
#4	#01-36	1.19
#5	#01-39	1.17
#6	#01-43	1.17
#7	#05-13	0.45
#8	#05-14	1.13
#9	#10-18	0.67
#10	#10-19	0.35
#11	#20-03	0.45
#12	#20-24	3.5
	Total	17.8

4.6 Potential Emission Summary

The potential emissions for the tanks and loading rack are summarized in Table 4-6.

Table 4-6 – Potential Emissions (tons/year)

Unit	TSP/PM10/PM2.5	SO₂	NO_x	CO	VOCs	CO₂e
#1	2.0	0.05	36.4	20.5	130	36,323
Storage Tanks	0.0	0.0	0.0	0.0	17.8	0.0
Total	2	0	36	21	148	36,323

NuStar's potential emissions for regulated air pollutants are greater than the major source threshold for the PSD program; however, NuStar constructed this facility prior to the promulgation of the PSD program. Therefore, NuStar is grandfathered-in under the PSD

program. However, any modification that occurs at this facility must be reviewed to determine if it is considered a major modification and subject to a PSD review.

5.0 National Emission Standards for Hazardous Air Pollutants

The Department reviewed 40 CFR Part 61 to determine the applicability to this facility to any of the subparts and determined there were no applicable subparts.

6.0 Maximum Achievable Control Technology Standards

The federal Maximum Control Technology Standards are applicable to both major and area sources of hazardous air pollutants. A major source of a hazardous air pollutants is a facility that has the potential to emit greater than 10 tons of a single hazardous air pollutant or 25 tons of any combination of a hazardous air pollutants. An area source is a source that is not a major source of hazardous air pollutants.

6.1 Potential HAP Emissions

The Department used the baseline values for gasoline vapor phase HAP-VOC weight percentages listed in Table 11.3-2 of the EPA's January 2001 document *Gasoline Marketing (Stage I and Stage II)*, which are displayed in Table 6-1.

Table 6-1: Gasoline Vapor Phase HAP-VOC Weight Percentages

HAP Component	Percentage of total VOC emissions
Benzene	0.9 %
Ethyl Benzene	0.1 %
Toluene	1.3 %
Xylene	0.5 %
2,2,4-Trimethylpentane	0.8 %
Hexane	1.6 %
Cumene	0.05 %
Total =	5.25 %

Based on the HAP-VOC percentages above, hexane will be the single hazardous air pollutant emitted in the greatest amount. Table 6-2 identifies the potential hazardous air pollutant emissions from the loading rack considering the vapor combustion unit. Again, gasoline will create the greatest amount of hazardous air pollutant emissions from the loading rack. In addition, NuStar is required to operate the vapor combustion unit at all times, therefore, the potential emissions from the loading rack will be based on using the vapor combustion unit.

Table 6-2 – Potential Loading Rack Emissions

	Gasoline
VOC emissions (tons per year)	405
HAP percentage	5.25%
Hexane percentage	1.6%

HAP total (tons per year)	21.3
Hexane Total (tons per year)	6.5

EPA's AP-42, Chapter 1.5 for liquid petroleum gas combustion does not list an emission factor for hazardous air pollutants. Therefore, the Department considers the hazardous air pollutants from burning propane are negligible.

The storage tank emissions were calculated by the applicant using the Environmental Protection Agency's Tanks 4.09 program and are included in the application. The tank emission results are summarized in Table 6-3.

Table 6-3 – Potential HAP Emissions from Tanks

Unit	Tank	HAPs (tons per year)	Hexane (tons per year)
#2	#01-07	0.2	0.06
#3	#01-08	0.2	0.06
#4	#01-36	0.06	0.02
#5	#01-39	0.05	0.02
#6	#01-43	0.06	0.02
#7	#05-13	0.02	0.01
#8	#05-14	0.06	0.02
#9	#10-18	0.04	0.01
#10	#10-19	0.02	0.01
#11	#20-03	0.02	0.01
#12	#20-24	0.2	0.06
	Total	0.8	0.3

The potential hazardous air pollutant emissions for the loading rack and storage tanks are summarized in Table 6-4.

Table 6-4: Potential Uncontrolled HAP Emissions

Source	Total HAPs	Hexane
Loading Rack	21.3 tons/year	6.5 tons/year
Storage Tanks	0.8 tons/year	0.3 tons/year
Total =	22 tons/year	7 tons/year

Table 6-4 demonstrates NuStar is considered an area source of hazardous air pollutants. DENR reviewed the Maximum Achievable Control Technology Standards under 40 CFR Part 63 and determined the following may be applicable to NuStar.

6.2 ARSD 74:36:08:12 - 40 CFR 63, Subpart R

In accordance with ARSD 74:36:08:12, as referenced to 40 CFR § 63.420(a), the affected source to which this subpart applies is each bulk gasoline terminal, except those bulk gasoline terminals

that result in an E_T value less than 1 and the facility applies with 40 CFR § 63.420(c), (d), (e), and (f). E_T is based on Equation 6.1 and is derived from 40 CFR § 63.420(a)(1).

Equation 6-1 – Area Source Equation for Gasoline Distribution Facilities

$$E_T = CF \cdot 0.59 \cdot T_F \cdot (1 - CE) + 0.17 \cdot T_E + 0.08 \cdot T_{ES} + 0.038 \cdot T_I + 8.5 \times 10^{-6} \cdot C + KQ + 0.04(OE)$$

Where:

- E_T = Emissions screening factor for bulk gasoline terminals;
- CF = 0.161 for bulk gasoline terminals that do not handle any reformulated or oxygenated gasoline containing 7.6 percent by volume or greater methyl tert-butyl ether or 1.0 if handling reformulated or oxygenated gasoline containing 7.6 percent by volume or greater methyl tert-butyl ether;
- T_F = Total number of fixed roof gasoline storage tanks without an internal floating roof;
- CE = Control efficiency of the vapor processing system on the storage vessels;
- T_E = Total number of external floating roof gasoline storage tanks with only primary seals;
- T_{ES} = Total number of external floating roof gasoline storage tanks with primary and secondary seals;
- T_I = Total number of fixed roof gasoline storage tanks with an internal floating roof;
- C = The number of pumps, valves, connectors, load arm valves, and open ended lines in gasoline service;
- K = $4.52E-6$ for bulk gasoline terminals with uncontrolled loading racks (no vapor collection and processing system) or $4.5E10-9$ for bulk gasoline terminals with controlled loading racks (loading racks that have vapor collection and processing system installed on the emission stream);
- Q = Gasoline throughput limit, in liters per day; and
- OE = Total HAP from other emission sources not specified by the other parameters (miscellaneous sources).

NuStar requested changes in the application to the screening equation (Equation 6-1) for the following:

1. Change T_F from 4 to 2 to reflect the number of fixed roof tanks be changed from 4 to 2;
2. Change OE from 0.698 to 0.567; and
3. Change Q from 48,000 to 60,000 barrels per day or 9,539,208 liters per day.

Table 6-5 displays the values for Equation 6-1.

Table 6-5 – Values for the Area Source Equation

Terminal	CF	T_F	CE	T_E	T_{ES}	T_I	C	K	Q	OE
Mitchell	0.161	2	0	0	0	2	4,000	$2.16E-07$	9,539,208	0.567

Based on Equation 6-1 and using the parameters in Table 6-5, E_T equates to value of 0.56 and is less than 1.0. Therefore, NuStar is considered an area source and this MACT standard is not applicable.

6.3 74:36:08:12 – 40 CFR 63, Subpart BBBBBB

Subpart BBBBBB applies to each area source gasoline distribution bulk terminals, bulk plants, and pipeline facilities. NuStar's facility in Mitchell is considered a bulk gasoline terminal because its gasoline throughput is 20,000 gallons per day or greater. NuStar is subject to the requirements of Subpart BBBBBB because it is a bulk gasoline terminal that is not subject to 40 CFR Part 63, Subpart R or CC.

Based on NuStar's gasoline throughput limit for Subpart R, NuStar's bulk gasoline terminal is capable of loading 250,000 gallons or more of gasoline per day. NuStar submitted its initial notification for Subpart BBBBBB on December 27, 2010, and indicated it was in compliance with the Subpart BBBBBB. On January 25, 2012, NuStar submitted a semiannual report and Notification of Compliance in one report. NuStar indicated it was in compliance with Subpart BBBBBB.

NuStar commenced construction of the Mitchell facility prior to November 9, 2006 and has not modified any of the operations that would be considered reconstruction as defined in 40 CFR § 63.2. Therefore, NuStar's Mitchell facility is considered an existing affected source and must comply with the standards in this subpart no later than January 10, 2011.

Unit #12 (Tank #20-24) is applicable to 40 CFR Part 60 Subpart Kb. In accordance with 40 CFR § 63.11087(f), if a gasoline storage tank is subject to and complies with the control requirements in 40 CFR Part 60 Subpart Kb, the storage tank will be deemed in compliance with 40 CFR Part 63 Subpart BBBBBB.

6.4 Other MACT Standards

The Department reviewed the other Maximum Achievable Control Technology Standards and determined there are no other standards applicable to NuStar.

7.0 State Requirements

7.1 State Particulate Emission Limits

ARSD 74:36:06:02(1) and 74:36:06:03(1), establish state emission limits for total suspended particulate matter. In addition, ARSD 74:36:12:01 establishes a visible emission limit of 20 percent opacity for each unit. The vapor combustion unit associated with Unit #1 is the only unit that emits particulate emissions.

In accordance with ARSD 74:36:06:02(1)(a), a fuel burning unit with heat input value less than 10 million Btus per hour may not exceed 0.6 pounds of particulate emissions per million Btu of heat input. Based on the heat input capacity of the vapor combustion unit, it is not applicable to this total suspended particulate matter emission limit.

In accordance with ARSD 74:36:06:02(1)(b), a fuel burning unit with a heat input equal to or greater than 10 million Btus per hour heat input may not exceed the particulate emissions rate determined by Equation 7-1.

Equation 7-1 – Particulate Emissions Limit for Fuel Burning Units =

$$E_{TSP} = 0.811 \times H^{-0.131}$$

Where:

- E_{TSP} = emission rate, in pounds per million Btu heat input, and
- H = heat input, in million Btus per hour.

The heat input “H” for the vapor combustor is listed at 52 million Btus per hour. Therefore, the total suspended particulate emission limit is 0.5 pounds per million Btus. Based on burning propane, the particulate matter emission rate is 0.009 pounds per million Btus which demonstrates compliance with the state’s particulate limit.

7.2 State Sulfur Dioxide Emission Limits

In accordance with ARSD 74:36:06:02(2) and ARSD 74:36:06:03(2), the permitted units may not emit sulfur dioxide emissions to the ambient air in an amount greater than three pounds of sulfur dioxide per million Btus of heat input. The sulfur dioxide emission limit is applicable to Unit #1.

Unit #1 is fired with propane. The sulfur dioxide emission rate for propane is 0.0002 pounds per million Btus. Therefore, NuStar is capable of meeting the sulfur dioxide emission limit.

7.3 Performance Tests

On June 8, 1999, a stack performance test was conducted on the vapor combustion unit to demonstrate compliance with the requirements in 40 CFR Part 60 Subpart XX. The volatile organic compound emission rate for gasoline was 56.3 milligrams per liter which is not in compliance with the limit of less than 35 milligrams per liter established in 40 CFR Part 60 Subpart XX.

On August 3, 1999, another stack performance test was conducted on the vapor combustion unit. The test resulted in a volatile organic compound emission rate of 3.4 pounds per hour while loading approximately 162,907 gallons of product of which 127,776 gallons was gasoline (78%). The volatile organic compound emission rate for gasoline was 14.9 milligrams per liter which is in compliance with the limit of less than 35 milligrams per liter established in 40 CFR Part 60 Subpart XX.

The Department will require another performance test to demonstrate compliance with 40 CFR Part 60 Subpart XX because the equipment and initial test are over 10 years old.

7.4 Compliance Assurance Monitoring

Compliance assurance monitoring is applicable to permit applications received on or after April 20, 1998, from major sources applying for a Title V air quality operating permit. NuStar's application was received after April 20, 1998. Therefore, compliance assurance monitoring is applicable to any unit that meets the following criteria:

1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
2. The unit uses a control device to achieve compliance with any such emission limit or standard; and
3. The unit has potential uncontrolled emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

The only unit that meets all three criteria is the loading rack. The loading rack is required to meet New Source Performance Standards under 40 CFR Part 60, Subpart XX. In accordance with 40 CFR § 64.2(b)(1)(i), if the applicable standard was proposed by EPA after November 15, 1990 pursuant to section 111 or 112 of the Act, the unit is exempt from compliance assurance monitoring. This New Source Performance Standard was revised after November 15, 1990. Therefore, compliance assurance monitoring is not applicable because the monitoring, recordkeeping and reporting requirements are sufficient in the New Source Performance Standards to ensure compliance.

7.5 Periodic Monitoring

Periodic monitoring is required for each emission unit that is subject to an applicable requirement at a source subject to Title V of the federal Clean Air Act. NuStar is required to meet particulate, sulfur dioxide, and opacity emission limits. Opacity from the storage tanks and loading rack are negligible. However, in this case the vapor combustor burns propane and the particulate, sulfur dioxide, and opacity emissions are negligible and based on past experience, do not warrant periodic monitoring. Periodic monitoring for the vapor combustor and tanks shall consist of the recordkeeping and reporting requirements in the New Source Performance Standards and Maximum Achievable Control Technology Standards that are applicable to NuStar.

8.0 RECOMMENDATION

Based on the above findings, NuStar is classified as a major source under the Title V air quality operating permit program. A major source is one that has the potential to emit over 100 tons per year of a regulated air pollutant. NuStar will be required to operate within the requirements stipulated in the following regulations:

- ARSD 74:36:05 – Operating Permits for Part 70 Sources;
- ARSD 74:36:06 – Regulated Air Pollutant Emissions;
- ARSD 74:36:07 – New Source Performance Standards;
- ARSD 74:36:08 – Maximum Achievable Control Technology Standards;

- ARSD 74:36:11 – Performance Testing;
- ARSD 74:36:12 – Control of Visible Emissions;
- ARSD 74:36:13 – Continuous Emission Monitoring Systems; and
- ARSD 74:37:01 – Air Emission Fees.

Based on information the Department received in the permit application, NuStar's Title V air quality operating permit may be renewed. Any questions on this review should be directed to Keith Gestring, Engineer II, with the Department of Environment and Natural Resources.